Exam. Code : 107202
Subject Code : 1734

Bachelor of Computer Application (BCA) 2nd Semester

PRINCIPLES OF DIGITAL ELECTRONICS

Paper—II

Time Allowed—Three Hours]   [Maximum Marks—75

Note :— Attempt **FIVE** questions in all, selecting at least **ONE** question from each section.

SECTION—A

1. Perform the following number conversions :—

   (i) $(3FEF)_{16} = (?)_{10}$

   (ii) $(F432)_{16} = (?)_{2}$

   (iii) $(65)_{8} = (?)_{2}$

   (iv) $(56)_{10} = (?)_{2}$

   (v) $(B3D8)_{16} = (?)_{8}$

   (vi) $(1011.101)_{2} = (?)_{16}$

   (vii) $(AB.CD)_{16} = (?)_{10}$

   (viii) $(72.22)_{8} = (?)_{16}$ 15

3082(2519)/EBH-1779   1   (Contd.)

2. Using 2's complement notation perform the following arithmetic operations using 8 bit register(s) :

   (i) 25 + (–12)

   (ii) 17 – 6

   (iii) –18 – 16

   (iv) –8 + (18)

   (v) 12 – (–19).   15

SECTION—B

3. Verify the following gate with truth table :

   (i) AND

   (ii) OR

   (iii) NOT

   (iv) NAND

   (v) NOR

   (vi) XOR

   (vii) XNOR.   15

4. Simplify F together with don't care conditions d in (i) SOP (ii) POS form :

   $F(w, x, y, z) = \Sigma(1, 2, 8, 9, 12, 13)$,

   $d(w, x, y, z) = \Sigma(10, 11, 14, 15)$.   15

SECTION—C

5. (a) Design a 3 : 8 decoder using basic gates.   7.5

   (b) Explain the function of a full adder with a truth table, logic circuit and block diagram.   7.5

6. (a) Explain the functioning of Multiplexer and Demultiplexer in detail. 7.5

   (b) Draw the circuit of an S-R Flip Flop using NAND gates only. From it derive the circuit of a D-Flip Flop and explain its truth table. 7.5

SECTION—D

7. (a) Compare static RAMs and dynamic RAMs. 7.5

   (b) Discuss the classification of ROM and RAM memories. 7.5

8. (a) Explain read and write operation of memory with timing waveforms. 7.5

   (b) Explain PROM and EPROM address selection logic. 7.5